

# Publications

Alonso-Roman R, Mosig AS, Figge MT, Papenfort K, Eggeling C, Schacher FH, Hube B<sup>#</sup>, Gresnigt MS (2024) Organ-on-chip models for infectious disease research. *Nat Microbiol* 9(4), 891-904.

Gardey E, Cseresnyés Z, Sobotta FH, Eberhardt J, Haziri D, Grunert PC, Kuchenbrod MT, Gruschwitz FV, Hoeppener S, Schumann M, Gaßler N, Figge MT, Stallmach A<sup>#</sup>, Brendel JC<sup>#</sup> (2024) Selective uptake into inflamed human intestinal tissue and immune cell targeting by wormlike polymer micelles. *Small* 20(21), 2470162.

Jojić K<sup>\*</sup>, Gherlone F<sup>\*</sup>, Cseresnyés Z, Bissell AU, Hoefgen S, Hoffmann S, Huang Y, Janevska S, Figge MT, Valiante V<sup>#</sup> (2024) The spatial organization of sphingofungin biosynthesis in *Aspergillus fumigatus* and its cross-interaction with sphingolipid metabolism. *mBio* 15(3), e0019524.

Kaden T<sup>\*</sup>, Alonso-Roman R<sup>\*</sup>, Akbarimoghaddam P<sup>\*</sup>, Mosig AS, Graf K, Raasch M, Hoffmann B, Figge MT<sup>#</sup>, Hube B<sup>#</sup>, Gresnigt MS<sup>#</sup> (2024) Modeling of intravenous caspofungin administration using an intestine-on-chip reveals altered *Candida albicans* microcolonies and pathogenicity. *Biomaterials* 307, 122525.

Ruhland E, Siemers M<sup>\*</sup>, Gerst R<sup>\*</sup>, Späth F, Vogt LN, Figge MT, Papenfort K, Fröhlich KS<sup>#</sup> (2024) The global RNA–RNA interactome of *Klebsiella pneumoniae* unveils a small RNA regulator of cell division. *Proc Natl Acad Sci U S A* 121(9), e2317322121.

Sarkar A, Praetorius JP, Figge MT<sup>#</sup> (2024) Deep learning-based characterization of neutrophil activation phenotypes in *ex vivo* human *Candida* blood infections. *Comput Struct Biotechnol J* 23, 1260-1273.

Timme S<sup>\*</sup>, Wendler S<sup>\*</sup>, Klassert TE, Saraiva JP, Nunes da Rocha U, Wittchen M, Schramm S, Ehricht R, Monecke S, Edel B, Rödel J, Löffler B, Soledad Ramirez M, Slevogt H, Figge MT<sup>#</sup>, Tuchscher L<sup>#</sup> (2024) Competitive inhibition and mutualistic growth in co-infections: Deciphering *Staphylococcus aureus* – *Acinetobacter baumannii* interaction dynamics. *ISME Commun* [Accepted]

Valentine M<sup>\*</sup>, Rudolph P<sup>\*</sup>, Dietschmann A, Tsavou A, Mogavero S, Lee S, Priest EL, Zhurgenbayeva G, Jablonowski N, Timme S, Eggeling C, Allert S, Dolk E, Naglik JR, Figge MT, Gresnigt MS<sup>#</sup>, Hube B<sup>#</sup> (2024) Nanobody-mediated neutralization of candidalysin prevents epithelial damage and inflammatory responses that drive vulvovaginal candidiasis pathogenesis. *mBio* 15(3), e0340923.

Walluks K<sup>\*</sup>, Hoffmann B<sup>\*</sup>, Svensson CM, Förster G, Müller AH, Jarvis J, Perkins J, Figge MTF<sup>#</sup>, Arnold D<sup>#</sup> (2024) Long-term stimulation by implanted pacemaker enables non-atrophic treatment of bilateral vocal fold paresis in a human-like animal model. *Sci Rep* 14(1), 10440.

Walluks K<sup>\*</sup>, Praetorius JP<sup>\*</sup>, Arnold D<sup>#</sup>, Figge MT<sup>#</sup> (2024) Impact of functional electrical stimulation on nerve-damaged muscles by quantifying fat infiltration using deep learning. *Sci Rep* 14(1), 12158.

Battista M, Hoffmann B, Bachelot Y, Zimmermann L, Teuber L, Jost A, Linde S, Westermann M, Müller MM, Slevogt H, Hammerschmidt S, Figge MT, Vilhena C<sup>#</sup>, Zipfel PF<sup>#</sup> (2023) The role of pneumococcal extracellular vesicles on the pathophysiology of the kidney disease hemolytic uremic syndrome. *mSphere* 8(4), e0014223.

Behrendt F, Pretzel D, Cseresnyés Z, Kleinsteuber M, Wloka T, Radosa L, Figge MT, Gottschaldt M, Brakhage AA, Schubert US<sup>#</sup> (2023) Hydrophilic cryogels as potential 3D cell culture materials: Synthesis and characterization of 2-(methacrylamido) glucopyranose-based polymer scaffolds. *J Polym Sci* 61(23), 3039-3054.

Behrendt F<sup>\*</sup>, Cseresnyés Z<sup>\*</sup>, Gerst R, Gottschaldt M, Figge MT<sup>#</sup>, Schubert US<sup>#</sup> (2023) Evaluation of reproducible cryogel preparation based on automated image analysis using deep learning. *J Biomed Mater Res A* 111(11), 1734-1749.

Dellbrügge F, Jesse LD, Medyukhina A, Liu N, Neugebauer S, Freißmuth M, Höppener S, Figge MT, Morrison H, Riecken LB, Press AT<sup>#</sup> (2023) Contribution of radixin and ezrin to the maintenance of hepatocytes' excretory function in health and disease. *Heliyon* 9(11), e21009.

Foo WL, Cseresnyés Z, Rössel C, Teng Y, Ramoji A, Chi M, Hauswald W, Huschke S, Hoepfener S, Popp J, Schacher FH, Sierka M, Figge MT, Press AT<sup>#</sup>, Bauer M<sup>#</sup> (2023) Tuning the corona-core ratio of polyplex micelles for selective oligonucleotide delivery to hepatocytes or hepatic immune cells. *Biomaterials* 294, 122016.

Gerst R<sup>\*</sup>, Cseresnyés Z<sup>\*</sup>, Figge MT<sup>#</sup> (2023) JIPipe: Visual batch processing for ImageJ. *Nat Methods* 20(2), 168-169.

Goldmann M<sup>\*</sup>, Schmidt F<sup>\*</sup>, Cseresnyés Z, Orasch T, Jahreis S, Hartung S, Figge MT, von Lilienfeld-Toal M, Heinekamp T, Brakhage AA<sup>#</sup> (2023) The lipid raft-associated protein stomatin is required for accumulation of dectin-1 in the phagosomal membrane and for full activity of macrophages against *Aspergillus fumigatus*. *mSphere* 8(1), e00523-22.

González K<sup>\*</sup>, Gangapurwala G<sup>\*</sup>, Alex J<sup>\*</sup>, Vollrath A, Cseresnyés Z, Weber C, Czaplewska JA, Hoepfener S, Svensson CM, Orasch T, Heinekamp T, Guerrero-Sánchez C, Figge MT, Schubert US, Brakhage AA (2023) Targeting of phagolysosomes containing conidia of the human pathogenic fungus *Aspergillus fumigatus* with polymeric particles. *Appl Microbiol Biotechnol* 107(2-3), 819-834.

Jia LJ, Rafiq M, Radosa L, Hortschansky P, Cunha C, Cseresnyés Z, Krüger T, Schmidt F, Heinekamp T, Straßburger M, Loeffler B, Doenst T, Lacerda JF, Campos A, Figge MT, Carvalho A, Kniemeyer O, Brakhage AA<sup>#</sup> (2023) *Aspergillus fumigatus* hijacks human p11 to redirect fungal-containing phagosomes to non-degradative pathway. *Cell Host Microbe* 31(3), 373-388.e10.

Kühne M<sup>\*</sup>, Hofmann S<sup>\*</sup>, Lindemann H, Cseresnyés Z, Dzierza A, Schröder D, Godmann M, Koschella A, Eggeling C, Fischer D, Figge MT, Heinze T, Heinzl T<sup>#</sup> (2023) Analysis of HDACi-coupled Nanoparticles: Opportunities and challenges. In: Humana, New York, NY (eds.) HDAC/HAT Function Assessment and Inhibitor Development. *Methods in Molecular Biology* 2589, pp. 129-144. Springer Protocols. ISBN: 978-1-0716-2787.

Ma F, Kaufmann R, Sedzicki J, Cseresnyés Z, Dehio C, Hoepfener S, Figge MT, Heintzmann R<sup>#</sup> (2023) Guided-deconvolution for correlative light and electron microscopy. *PLOS One* 18(3), e0282803.

Orasch T<sup>\*</sup>, Gangapurwala G<sup>\*</sup>, Vollrath A, González K, Alex J, De San Luis A, Weber C, Hoepfener S, Cseresnyés Z, Figge MT, Guerrero-Sanchez C, Schubert US<sup>#</sup>, Brakhage AA<sup>#</sup> (2023) Polymer-based particles against pathogenic fungi: A non-uptake delivery of compounds. *Biomater Adv* 146, 213300.

Praetorius JP, Walluks K, Svensson CM, Arnold D, Figge MT<sup>#</sup> (2023) IMFSegNet: Cost-effective and objective quantification of intramuscular fat in histological sections by deep learning. *Comput Struct Biotechnol J* 21, 3696-3704.

Press AT<sup>#</sup>, Ungelenk L<sup>\*</sup>, Medyukhina A, Pennington SA, Nietzsche S, Kan C, Lupp A, Dahmen U, Wang R, Settmacher U, Wetzker R, Figge MT, Clemens MG, Bauer M (2023) Sodium thiosulfate refuels the hepatic antioxidant pool reducing ischemia-reperfusion-induced liver injury. *Free Radic Biol Med* 204, 151-160.

Saffer C, Timme S, Rudolph P, Figge MT<sup>#</sup> (2023) Surrogate infection model predicts optimal alveolar macrophage number for clearance of *Aspergillus fumigatus* infections. *NPJ Syst Biol Appl* 9, 12.

Svensson CM<sup>\*</sup>, Reglinski K<sup>\*</sup>, Schliebs W, Erdmann R, Eggeling C<sup>#</sup>, Figge MT<sup>#</sup> (2023) Quantitative analysis of peroxisome tracks using a Hidden Markov Model. *Sci Rep* 13(1), 19694.

Belyaev I<sup>\*</sup>, Marolda A<sup>\*</sup>, Praetorius JP, Sarkar A, Medyukhina A, Hünninger K, Kurzai O, Figge MT (2022) Automated characterisation of neutrophil activation phenotypes in *ex vivo* human *Candida* blood infections. *Comput Struct Biotechnol J* 20, 2297-2308.

Engels G, Forster J, Streng A, Rücker V, Rudolph P, Pietsch F, Wallstabe J, Wallstabe L, Krauthausen M, Schmidt J, Ludwig T, Bauer C, Gierszewski D, Bendig J, Timme S, Jans T, Weißbrich B, Romanos M, Dölken L, Heuschmann P, Härtel C, Gágyor I, Figge MT, Liese J, Kurzai O (2022) Acceptance of different self-sampling methods for semiweekly SARS-CoV-2 testing in asymptomatic children and childcare workers at German Day Care Centers: A nonrandomized controlled trial. *JAMA Netw Open* 5(9), e2231798.

Forster J, Streng A, Rudolph P, Rücker V, Wallstabe J, Timme S, Pietsch F, Hartmann K, Krauthausen M, Schmidt J, Ludwig T, Gierszewski D, Jans T, Engels G, Weißbrich B, Romanos M, Dölken L, Heuschmann P, Härtel C, Gágyor I, Figge MT, Kurzai O, Liese J (2022) Feasibility of SARS-CoV-2 surveillance testing among children and childcare workers at German Day Care Centers: A nonrandomized controlled trial. *JAMA Netw Open* 5(1), e2142057.

Hoang TNM<sup>\*</sup>, Cseresnyés Z<sup>\*</sup>, Hartung S<sup>\*</sup>, Blickensdorf M, Saffer C, Rennert K, Mosig AS, von Lilienfeld-Toal M, Figge MT (2022) Invasive aspergillosis-on-chip: A quantitative treatment study of human *Aspergillus fumigatus* infection. *Biomaterials* 283, 121420.

Hoffmann B<sup>\*</sup>, Gerst R<sup>\*</sup>, Cseresnyés Z, Foo W, Sommerfeld O, Press AT, Bauer M, Figge MT (2022) Spatial quantification of clinical biomarker pharmacokinetics through deep learning-based segmentation and signal-oriented analysis of MSOT data. *Photoacoustics* 26, 100361.

Richter I, Radosa S, Cseresnyés Z, Ferling I, Büttner H, Niehs SP, Gerst R, Figge MT, Hillmann F, Hertweck C (2022) Toxin-producing endosymbionts shield pathogenic fungus against micropredators. *mBio* 13(5), e0144022.

Schmidt C<sup>\*</sup>, Hanne J<sup>\*</sup>, Moore J, Meesters C, Ferrando-May E, Weidtkamp-Peters S, members of the NFDI4BIOIMAGE initiative (incl. Svensson CM, Figge MT) (2022) Research data management for bioimaging: The 2021 NFDI4BIOIMAGE community survey. *F1000Research* 11, 638.

Siwczak F<sup>\*</sup>, Cseresnyés Z<sup>\*</sup>, Hassan MIA, Oluwasegun AK, Carlstedt S, Sigmund A, Groger M, Surewaard BGJ, Werz O, Figge MT, Tuchscher L, Löffler B, Mosig AS (2022) Human

macrophage polarization determines bacterial persistence of *Staphylococcus aureus* in a liver-on-chip-based infection model. *Biomaterials* 287, 121632.

Belyaev I\*, Praetorius JP\*, Medyukhina A, Figge MT (2021) Enhanced segmentation of label-free cells for automated migration and interaction tracking. *Cytometry A* 99(12), 1218-1229.

Büttner H\*, Niehs SP\*, Vandelannoote K, Cseresnyés Z, Dose B, Richter I, Gerst R, Figge MT, Stinear TP, Pidot SJ, Hertweck C# (2021) Bacterial endosymbionts protect beneficial soil fungus from nematode attack. *Proc Natl Acad Sci U S A* 118(37), e2110669118.

Campagner A, Ciucci D, Svensson CM, Figge MT, Cabitza F (2021) Ground truthing from multi-rater labeling with three-way decision and possibility theory. *Inf Sci* 545, 771-790.

Kästner B, Hengoju S, Svensson CM, Figge MT, Rosenbaum MA (2021) Mit Tropfenmikrofluidik zu Hochgeschwindigkeits-Biotechnologie. *BIOspektrum* 27(3), 260-262. (Review)

Kühne M, Lindemann H, Grune C, Schröder D, Cseresnyés Z, Godmann M, Koschella A, Figge MT, Eggeling C, Fischer D, Heinze T#, Heinzl T# (2021) Biocompatible sulfated valproic acid-coupled polysaccharide-based nanocarriers with HDAC inhibitory activity. *J Control Release* 329, 717-730.

Lehnert T, Prauße MTE, Hünninger K, Praetorius JP, Kurzai O, Figge MT (2021) Comparative assessment of immune evasion mechanisms in human whole-blood infection assays by a systems biology approach. *PLOS One* 16(4), e0249372.

Lehnert T\*, Leonhardt I\*, Timme S, Thomas-Rüddel D, Bloos F, Sponholz C, Kurzai O, Figge MT#, Hünninger K# (2021) *Ex vivo* immune profiling in patient blood enables quantification of innate immune effector functions. *Sci Rep* 11(1), 12039.

Muljajew I\*, Huschke S\*, Ramoji A, Cseresnyés Z, Hoepfener S, Nischang I, Foo W, Popp J, Figge MT, Weber C, Bauer M, Schubert US#, Press AT# (2021) Stealth effect of short polyoxazolines in graft copolymers: Minor changes of backbone end group determine liver cell-type specificity. *ACS Nano* 15(7), 12298-12313.

Press AT, Babic P, Hoffmann B, Müller T, Foo W, Hauswald W, Benecke J, Beretta M, Cseresnyés Z, Hoepfener S, Nischang I, Coldewey SM, Gräler MH, Bauer R, Gonnert F, Gaßler N, Wetzker R, Figge MT, Schubert US, Bauer M (2021) Targeted delivery of a phosphoinositide 3-kinase  $\gamma$  inhibitor to restore organ function in sepsis. *EMBO Mol Med* 13(10), e14436.

Sommerfeld O, Medyukhina A, Neugebauer S, Ghait M, Ulferts S, Lupp A, König R, Wetzker R, Schulz S, Figge MT, Bauer M, Press AT (2021) Targeting complement C5a receptor 1 for the treatment of immunosuppression in sepsis. *Mol Ther* 29(1), 338-346.

Stanford FA, Matthies N, Cseresnyés Z, Figge MT, Hassan MIA, Voigt K (2021) Expression patterns in reductive iron assimilation and functional consequences during phagocytosis of *Lichtheimia corymbifera*, an emerging cause of mucormycosis. *J Fungi (Basel)* 7(4), 272.

Blickensdorf M, Timme S, Figge MT (2020) Hybrid agent-based modeling of *Aspergillus fumigatus* infection to quantitatively investigate the role of Pores of Kohn in human alveoli. *Front Microbiol* 11, 1951.

Böttcher B, Hoffmann B, Garbe E, Weise T, Cseresnyés Z, Brandt P, Dietrich S, Driesch D, Figge

MT, Vylkova S (2020) The transcription factor Stp2 is important for *Candida albicans* biofilm establishment and sustainability. *Front Microbiol* 11, 794.

Cseresnyes Z\*, Hassan MIA\*, Dahse HM, Voigt K, Figge MT; \* shared first authors (2020) Quantitative impact of cell membrane fluorescence labeling on phagocytosis measurements in confrontation assays. *Front Microbiol* 11, 1193.

Deinhardt-Emmer S, Rennert K, Schicke E, Cseresnyés Z, Windolph M, Nietzsche S, Heller R, Siwczak F, Haupt KF, Carlstedt S, Schacke M, Figge MT, Ehrhardt C, Löffler B, Mosig AS (2020) Co-infection with *Staphylococcus aureus* after primary influenza virus infection leads to damage of the endothelium in a human alveolus-on-a-chip model. *Biofabrication* 12(2), 025012.

Figge MT (2020) Advances in quantitative bioimage analysis for proteins and cells. *Cytometry Part A* 97(4), 344-346. (Review)

Gerst R, Medyukhina A, Figge MT (2020) MISA++: A standardized interface for automated bioimage analysis. *SoftwareX* 11, 100405.

Hassan MIA, Kruse JM, Krüger T, Dahse HM, Cseresnyés Z, Blango MG, Slevogt H, Hörhold F, Ast V, König R, Figge MT, Kniemeyer O, Brakhage AA, Voigt K (2020) Functional surface proteomic profiling reveals the host heat-shock protein A8 as a mediator of *Lichtheimia corymbifera* recognition by murine alveolar macrophages. *Environ Microbiol* 22(9), 3722-3740.

Marolda A, Hünninger K, Böttcher S, Vivas W, Löffler J, Figge MT, Kurzai O (2020) *Candida* species-dependent release of IL-12 by dendritic cells induces different levels of NK cell stimulation. *J Infect Dis* 221(12), 2060-2071.

Medyukhina A, Figge MT (2020) DeconvTest: Simulation framework for quantifying errors and selecting optimal parameters of image deconvolution. *J Biophotonics* 13(4), e201960079.

Medyukhina A\*, Blickensdorf M\*, Cseresnyés Z, Ruef N, Stein JV, Figge MT; \* authors contributed equally (2020) Dynamic spherical harmonics approach for shape classification of migrating cells. *Sci Rep* 10(1), 6072.

Schicke E, Cseresnyes Z, Rennert K, Vau V, Haupt KF, Hornung F, Nietzsche S, Swiczak F, Schmidtke M, Koch M, Glück B, Schacke M, Heller R, Mosig AS, Figge MT, Ehrhardt C, Löffler B, Deinhardt-Emmer S (2020) *Staphylococcus aureus* lung infection results in down-regulation of surfactant protein-A mainly caused by pro-inflammatory macrophages. *Microorganisms* 8(4), 577.

Schmidt F, Thywißen A, Goldmann M, Cunha C, Cseresnyés Z, Schmidt H, Rafiq M, Galiani S, Gräler MH, Chamilos G, Lacerda JF, Campos Jr A, Eggeling C, Figge MT, Heinekamp T, Filler SG, Carvalho A, Brakhage AA (2020) Flotillin-dependent lipid-raft microdomains are required for functional phagolysosomes against fungal infections. *Cell Rep* 32(7), 108017.

Shopova IA, Belyaev I, Dasari P, Jahreis S, Stroe MC, Cseresnyés Z, Zimmermann AK, Medyukhina A, Svensson C-M, Krüger T, Szeifert V, Nietzsche S, Conrad T, Blango MG, Kniemeyer O, von Lilienfeld-Toal M, Zipfel PF, Ligeti E, Figge MT, Brakhage AA (2020) Human neutrophils produce antifungal extracellular vesicles against *Aspergillus fumigatus*. *mBio* 11(2), e00596-20.

Sreekantapuram S\*, Lehnert T\*, Prauße MTE, Berndt A, Berens C, Figge MT\*\*, Jacobsen ID\*\* ; \* authors contributed equally; \*\* corresponding authors (2020) Dynamic interplay of host and

pathogens in an avian whole blood model. *Front Immunol* 11, 500.

Tille A, Lehnert T, Zipfel PF, Figge MT (2020) Quantification of factor H mediated self versus non-self discrimination by mathematical modeling. *Front Immunol* 11, 1911.

Al-Zaben N\*, Medyukhina A\*, Dietrich S, Marolda A, Hünninger K, Kurzai O, Figge MT; \* authors contributed equally (2019) Automated tracking of label-free cells with enhanced recognition of whole tracks. *Sci Rep* 9(1), 3317.

Blickensdorf M, Timme S, Figge MT (2019) Comparative assessment of aspergillosis by virtual infection modeling in murine and human lung. *Front Immunol* 10, 142.

Dasari P, Koleci N, Shopova I, Wartenberg D, Beyersdorf N, Dietrich S, Sahagun-Ruiz A, Figge MT, Skerka C, Brakhage AA, Zipfel PF (2019) Enolase from *Aspergillus fumigatus* is a moonlighting and immune evasion protein that binds the human plasma complement proteins factor H, FHL-1, C4BP, and plasminogen. *Front Immunol* 10, 2573.

Hassan MIA\*, Cseresnyes Z\*, Al-Zaben N, Dahse HM, Vilela de Oliveira RJ, Walther G, Voigt K\*\*, Figge MT\*\*; \* shared first authors; \*\* authors contributed equally (2019) The geographical region of origin determines the phagocytic vulnerability of *Lichtheimia* strains. *Environ Microbiol* 21(12), 4563-4581.

Hirth G, Svensson C-M, Böttcher K, Ullrich S, Figge MT, Jungnickel B (2019) Regulation of the germinal center reaction and somatic hypermutation dynamics by homologous recombination. *J Immunol* 203(6), 1493-1501.

Kresinsky A, Schnöder TM, Jacobsen ID, Rauner M, Hofbauer LC, Ast V, König R, Hoffmann B, Svensson C-M, Figge MT, Hilger I, Heidel FH, Böhmer FD, Müller JP (2019) Lack of CD45 in FLT3-ITD mice results in a myeloproliferative phenotype, cortical porosity, and ectopic bone formation. *Oncogene* 38(24), 4773-4787.

Maurer M, Gresnigt MS, Last A, Wollny T, Berlinghof F, Pospich R, Cseresnyes Z, Medyukhina A, Graf K, Gröger M, Raasch M, Siwczak F, Nietzsche S, Jacobsen ID, Figge MT, Hube B, Huber O, Mosig AS (2019) A three-dimensional immunocompetent intestine-on-chip model as *in vitro* platform for functional and microbial interaction studies. *Biomaterials* 220, 119396.

Svensson C-M, Figge MT (2019) Künstliche Intelligenz für die biomedizinische Bildgebung. *GIT Labor-Fachzeitschrift*, (Review)

Svensson C-M\*, Shydkiy O\*, Dietrich S, Mahler L, Weber T, Choudhary M, Tovar M, Figge MT\*\*, Roth M\*\*; \* authors contributed equally; \* corresponding authors; \*\* authors contributed equally (2019) Coding of experimental conditions in microfluidic droplet assays using colored beads and machine learning supported image analysis. *Small* 15(4), e1802384.

Tuchscher L, Pöllath C, Siegmund A, Deinhardt-Emmer S, Hörr V, Svensson C-M, Figge MT, Monecke S, Löffler B (2019) Clinical *S. aureus* isolates vary in their virulence to promote adaptation to the host. *Toxins* 11(3), 135.

Allert S\*, Förster TM\*, Svensson C-M, Richardson JP, Pawlik T, Hebecker B, Rudolphi S, Juraschitz M, Schaller M, Blagojevic M, Morschhäuser J, Figge MT, Jacobsen ID, Naglik JR, Kasper L, Mogavero S, Hube B; \* authors contributed equally (2018) *Candida albicans*-induced epithelial damage mediates translocation through intestinal barriers. *mBio* 9(3), e00915.

Cseresnyes Z\*, Kraibooj K\*, Figge MT, \* authors contributed equally (2018) Hessian-based quantitative image analysis of host- pathogen confrontation assays. *Cytometry A* 93(3), 346-356.

Dasari P, Shopova IA, Stroe M, Wartenberg D, Dahse HM, Beyersdorf N, Hortschansky P, Dietrich S, Cseresnyés Z, Figge MT, Westermann M, Skerka C, Brakhage AA, Zipfel PF (2018) Aspf2 from *Aspergillus fumigatus* recruits human immune regulators for immune evasion and cell damage. *Front Immunol* 9, 1635.

Dennhardt S, Pirschel W, Wissuwa B, Daniel C, Gunzer F, Lindig S, Medyukhina A, Kiehntopf M, Rudolph WW, Zipfel PF, Gunzer M, Figge MT, Amman K, Coldewey S (2018) Modeling hemolytic-uremic syndrome: In-depth characterization of distinct murine models reflecting different features of human disease. *Front Immunol* 9, 1459.

Dudeck J\*, Medyukhina A\*, Figge MT\*\*, Dudeck A\*\* ; \* authors contributed equally; \*\* corresponding authors, authors contributed equally (2018) Waffenübergabe im Immunsystem. *Laborjournal* 4, 40-43. (Review)

Figge MT (2018) Quantitative bioimage analysis of cell characteristics. *Cytometry A* 93(3), 278-280. (Review)

Figge MT (2018) Drops of blood in focus. *LICHTGEDANKEN - The Magazine of the Friedrich Schiller University* 3, 26-29. (Review)

Meinel C, Sparta G, Dahse HM, Hörhold F, König R, Westermann M, Cseresnyés Z, Coldewey SM, Figge MT, Hammerschmidt S, Skerka C, Zipfel PF (2018) *Streptococcus pneumoniae* from patients with hemolytic uremic syndrome binds human plasminogen via the surface protein PspC and uses plasmin to damage human endothelial cells. *J Infect Dis* 217(3), 358-370.

Praube MTE, Lehnert T, Timme S, Hünninger K, Leonhardt I, Kurzai O, Figge MT (2018) Predictive virtual infection modeling of fungal immune evasion in human whole blood. *Front Immunol* 9, 560.

Schaarschmidt B, Vlaic S, Medyukhina A, Neugebauer S, Nietzsche S, Gonnert FA, Rödel J, Singer M, Kiehntopf M, Figge MT, Jacobsen ID, Bauer M, Press AT (2018) Molecular signatures of liver dysfunction are distinct in fungal and bacterial infections in mice. *Theranostics* 8(14), 3766-3780.

Svensson C-M, Medyukhina A, Belyaev I, Al-Zaben N, Figge MT (2018) Untangling cell tracks: Quantifying cell migration by time lapse image data analysis. *Cytometry A* 93(3), 357-370. (Review)

Timme S, Lehnert T, Praube MTE, Hünninger K, Leonhardt I, Kurzai O, Figge MT (2018) Quantitative simulations predict treatment strategies against fungal infections in virtual neutropenic patients. *Front Immunol* 9, 667.

Brandes S, Dietrich S, Hünninger K, Kurzai O, Figge MT (2017) Migration and interaction tracking for quantitative analysis of phagocyte-pathogen confrontation assays. *Medical Image Analysis* 36, 172-183.

Dudeck J\*, Medyukhina A\*, Froebel J, Svensson C-M, Kotrba J, Gerlach M, Gradtke AC, Schröder B, Speier S, Figge MT\*\*, Dudeck A\*\* ; \* authors contributed equally; \*\* corresponding authors, authors contributed equally (2017) Mast cells acquire MHCII from dendritic cells during skin inflammation. *J Exp Med* 214(12), 3791-3811.

Figge MT (2017) Systems Biology of Infection. In: NOVA ACTA LEOPOLDINA (ed.) Crossing Boundaries in Science. Documentation of the Workshop of the German National Academy of Sciences Leopoldina, Weimar, 06/30/2016-07/02/2016, 419, pp. 45-51. Wissenschaftliche Verlagsgesellschaft Stuttgart, Halle (Saale). ISBN: 978-3-8047-3758. (Review)

Klingberg A, Hasenberg A, Ludwig-Portugall I, Medyukhina A, Männ L, Brenzel A, Engel DR, Figge MT, Kurts C, Gunzer M (2017) Fully automated evaluation of total glomerular number and capillary tuft size in murine nephritic kidneys using lightsheet microscopy. *J Am Soc Nephrol* 28(2), 452-459.

Lehnert T, Figge MT (2017) Dimensionality of motion and binding valency govern receptor-ligand kinetics as revealed by agent-based modeling. *Front Immunol* 8, 1692.

Svensson C-M, Bondoc K G, Pohnert G, Figge MT (2017) Segmentation of clusters by template rotation expectation maximization. *Comput Vis Image Underst* 152, 64-72.

Svensson C-M\*, Hoffmann B\*, Irmeler I, Straßburger M, Figge MT\*\*, Saluz HP\*\* ; \* authors contributed equally; \*\* corresponding authors, authors contributed equally (2017) Quantification of arthritic bone degradation by analysis of 3D micro-computed tomography data. *Sci Rep* 7, 44434.

Buhlmann D\*, Eberhardt HU\*, Medyukhina A, Prodinger WM, Figge MT, Zipfel PF, Skerka C\* authors contributed equally (2016) FHR3 Blocks C3d-Mediated Coactivation of Human B Cells. *J Immunol* 197(2), 620-629.

Pollmächer J, Timme S, Schuster S, Brakhage AA, Zipfel PF, Figge MT (2016) Deciphering the counterplay of *Aspergillus fumigatus* infection and host inflammation by evolutionary games on graphs. *Sci Rep* 6, 27807.

Brandes S, Mokhtari Z, Essig F, Hünninger K, Kurzai O, Figge MT (2015) Automated segmentation and tracking of non-rigid objects in time-lapse microscopy videos of polymorphonuclear neutrophils. *Medical Image Analysis* 20(1), 34-51.

Duggan S, Essig F, Hünninger K, Mokhtari Z, Bauer L, Lehnert T, Brandes S, Häder A, Jacobsen ID, Martin R, Figge MT, Kurzai O (2015) Neutrophil activation by *Candida glabrata* but not *Candida albicans* promotes fungal uptake by monocytes. *Cell Microbiol* 17(9), 1259-1276.

Figge MT, (2015) Image-based Systems Biology: what you get is more than you can see. *G.I.T. Laboratory Journal Europe* 19, 13-15.

Figge MT, Murphy RF (2015) Image-based Systems Biology. *Cytometry A* 87(6), 459-461.

Hünninger K, Bieber K, Martin R, Lehnert T, Figge MT, Löffler J, Guo R, Riedemann N, Kurzai O (2015) A second stimulus required for enhanced antifungal activity of human neutrophils in blood is provided by anaphylatoxin C5a. *The Journal of Immunology* 194(3), 1199-1210.

Kraibooj K\*, Schoeler H\*, Svensson C-M, Brakhage AA, Figge MT (2015) Automated quantification of the phagocytosis of *Aspergillus fumigatus* conidia by a novel image analysis algorithm. *Frontiers in Microbiology* 6(549), \*authors contributed equally.

Lehnert T\*, Timme S\*, Pollmächer J, Hünninger K, Kurzai O, Figge MT (2015) Bottom-up modeling approach for the quantitative estimation of parameters in pathogen-host interactions. *Frontiers in Microbiology* 6(608), \*authors contributed equally.



Mahler L, Tovar M, Weber T, Brandes S, Rudolph MM, Ehgartner J, Mayr T, Figge MT, Roth M, Zang E (2015) Enhanced and homogeneous oxygen availability during incubation of microfluidic droplets. *RSC Advances* 5, 101871-101878.

Mattern DJ, Schoeler H, Weber J, Novohradská S, Kraibooj K, Dahse HM, Hillmann F, Valiante V, Figge MT, Brakhage AA (2015) Identification of the antiphagocytic trypacidin gene cluster in the human-pathogenic fungus *Aspergillus fumigatus*. *Applied Microbiology and Biotechnology* 99(23), 10151-10161.

Medyukhina A, Timme S, Mokhtari Z, Figge MT (2015) Image-based Systems Biology of Infection. *Cytometry A* 87(6), 462-470.

Mokhtari Z\*, Mech F\*, Zehentmeier S, Hauser AE, Figge MT (2015) Quantitative image analysis of cell colocalization in murine bone marrow. *Cytometry A* 87(6), 503-512, \*authors contributed equally.

Pollmächer J, Figge MT (2015) Deciphering chemokine properties by a hybrid agent-based model of *Aspergillus fumigatus* infection in human alveoli. *Frontiers in Microbiology* 6(503),

Svensson C-M, Hübler R, Figge MT (2015) Automated classification of circulating tumor cells and the impact of inter-observer variability on classifier training and performance. *Journal of Immunology Research* 2015(Article ID 573165), 9.

Hünniger K\*, Lehnert T\*, Bieber K, Martin R, Figge MT+, Kurzai O+ (2014) A virtual infection model quantifies innate effector mechanisms and *Candida albicans* immune escape in human blood. *PLOS Comput Biol* 10(2), e1003479, \*/+authors contributed equally.

Irmeler IM, Gebhardt P, Hoffmann B, Opfermann T, Figge MT, Saluz HP, Kamradt T (2014) 18 F-Fluoride positron emission tomography/computed tomography for noninvasive in vivo quantification of pathophysiological bone metabolism in experimental murine arthritis. *Arthritis Res Ther* 16(4), R155.

Kraibooj K\*, Park HR\*, Dahse HM, Skerka C, Voigt K+, Figge MT+ (2014) Virulent strain of *Lichtheimia corymbifera* shows increased phagocytosis by macrophages as revealed by automated microscopy image analysis. *Mycoses* 57(Suppl. 3), 56-66, \*/+authors contributed equally.

Mech F, Wilson D, Lehnert T, Hube B, Figge MT (2014) Epithelial invasion outcompetes hypha development during *Candida albicans* infection as revealed by an image-based systems biology approach. *Cytometry A* 85(2), 126-139.

Pollmächer J, Figge MT (2014) Agent-based model of human alveoli predicts chemotactic signaling by epithelial cells during early *Aspergillus fumigatus* infection. *PLOS ONE* 9(10), e111630.

Svensson C-M, Krusekopf S, Lücke J, Figge MT (2014) Automated detection of circulating tumor cells with naive Bayesian classifiers. *Cytometry A* 85(6), 501-511.

Coelho FM, Natale D, Soriano SF, Hons M, Swoger J, Mayer J, Danuser R, Scandella E, Pieczyk M, Zerwes HG, Junt T, Sailer AW, Ludewig B, Sharpe J, Figge MT, Stein JV (2013) Naive B-cell trafficking is shaped by local chemokine availability and LFA-1-independent stromal interactions. *Blood* 121(20), 4101-4109.

Figge MT, Osiewacz HD, Reichert AS (2013) Quality control of mitochondria during aging: is there a good and a bad side of mitochondrial dynamics? *Bioessays* 35(4), 314-322.

Mokhtari Z, Mech F, Zitzmann C, Hasenberg M, Gunzer M, Figge MT (2013) Automated characterization and parameter-free classification of cell tracks based on local migration behavior. *PLOS ONE* 8(12), e80808.

Zang E\*, Brandes S\*, Tovar M, Martin K, Mech F, Horbert P, Henkel T, Figge MT, Roth M (2013) Real-time image processing for label-free enrichment of Actinobacteria cultivated in picolitre droplets. *Lab Chip* 13(18), 3707-3713, \*authors contributed equally.

Zhang Y, Meyer-Hermann M, George LA, Figge MT, Khan M, Goodall M, Young SP, Reynolds A, Falciani F, Waisman A, Notley CA, Ehrenstein MR, Kosco-Vilbois M, Toellner KM (2013) Germinal center B cells govern their own fate via antibody feedback. *J Exp Med* 210(3), 457-464.

Figge MT, Reichert AS, Meyer-Hermann M, Osiewacz HD (2012) Deceleration of fusion-fission cycles improves mitochondrial quality control during aging. *PLOS Comput Biol* 8(6), e1002576.

Guthke R, Linde J, Mech F, Figge MT (2012) Systems biology of microbial infection. *Front Microbiol* 3, 328.

Mech F, Figge MT (2012) Image-based systems biology: A quantitative approach to elucidate the kinetics of fungal morphologies and virulence. In: Highlight Papers of the German Conference on Bioinformatics 2012 German Conference on Bioinformatics, Jena, GCB.

Tokarski C, Hummert S, Mech F, Figge MT, Germerodt S, Schroeter A, Schuster S (2012) Agent-based modeling approach of immune defense against spores of opportunistic human pathogenic fungi. *Front Microbiol* 3, 129.

Figge MT, Meyer-Hermann M (2011) Modelling Intravital Two-Photon Data of Lymphocyte Migration and Interaction In: Molina-París C, Lythe G (eds.) *Mathematical Models and Immune Cell Biology* pp. 121-139. Springer, Heidelberg. ISBN: 978-1-4419-7724.

Mech F\*, Thywissen A\*, Guthke R, Brakhage AA, Figge MT (2011) Automated image analysis of the host-pathogen interaction between phagocytes and *Aspergillus fumigatus*. *PLOS ONE* 6(5), e19591, \*authors contributed equally.

Fatehi H, Meyer-Hermann M, Figge MT (2010) Modelling cellular aggregation induced by chemotaxis and phototaxis. *Math Med Biol* 27(4), 373-384.

Garin A, Meyer-Hermann M, Contie M, Figge MT, Buatois V, Gunzer M, Toellner KM, Elson G, Kosco-Vilbois MH (2010) Toll-like receptor 4 signaling by follicular dendritic cells is pivotal for germinal center onset and affinity maturation. *Immunity* 33(1), 84-95.

Figge MT (2009) Optimization of immunoglobulin substitution therapy by a stochastic immune response model. *PLOS ONE* 4(5), e5685.

Figge MT, Meyer-Hermann M (2009) Modeling receptor-ligand binding kinetics in immunological synapse formation. *The European Physical Journal D* 51(1), 153-160.

Meyer-Hermann M, Figge MT, Straub RH (2009) Mathematical modeling of the circadian rhythm of key neuroendocrine-immune system players in rheumatoid arthritis: a systems biology

approach. *Arthritis Rheum* 60(9), 2585-2594.

Meyer-Hermann M, Figge MT, Toellner KM (2009) Germinal centres seen through the mathematical eye: B-cell models on the catwalk. *Trends Immunol* 30(4), 157-164.

Figge MT, Garin A, Gunzer M, Kosco-Vilbois M, Toellner KM, Meyer-Hermann M (2008) Deriving a germinal center lymphocyte migration model from two-photon data. *J Exp Med* 205(13), 3019-3029.

Figge MT, Meyer-Hermann M (2006) Geometrically repatterned immunological synapses uncover formation mechanisms. *PLOS Comput Biol* 2(11), e171.

Michielsen K, Figge MT, De Raedt H, De Hossen JTM (2004) Molecular dynamics simulation of nanoindentation In: Computer simulation studies in condensed-matter physics XVI pp. 250-255. Springer-Verlag, Berlin Heidelberg. ISBN: 978-3-642-63923.

De Raedt H, Kole JS, Michielsen K, Figge MT (2003) Unified framework for numerical methods to solve the time-dependent Maxwell equations. *Computer Physics Communication* 156, 43-61.

De Raedt H, Michielsen K, Kole JS, Figge MT (2003) Chebyshev method to solve the time-dependent Maxwell equations. In: Computer simulation studies in condensed-matter physics XV, pp. 211-215. Springer-Verlag Berlin Heidelberg.

De Raedt H, Michielsen K, Kole JS, Figge MT (2003) One-step finite-difference time-domain algorithm to solve the Maxwell equations. *Phys Rev E Stat Nonlin Soft Matter Phys* 67(5 Pt 2), 056706.

De Raedt H, Michielsen K, Kole JS, Figge MT (2003) Solving the Maxwell equations by the Chebyshev method: a one-step finite-difference time-domain algorithm. *IEEE Transactions on Antennas and Propagation* 51, 3155-3160.

Kole JS, Figge MT, De Raedt H (2003) Solving the time-dependent Maxwell equations by unconditionally stable algorithms. In: Computer simulation studies in condensed-matter physics XV pp. 205-210. Springer-Verlag Berlin Heidelberg.

Figge MT (2002) Statistical model for receptor-ligand binding thermodynamics. *Phys Rev E Stat Nonlin Soft Matter Phys* 66(6 Pt 1), 061901.

Figge MT, Mostovoy M, Knoester J (2002) Peierls instability due to the interaction of electrons with both acoustic and optical phonons in metallic carbon nanotubes. *Physical Review B* 65(12), 125416.

Kole JS, Figge MT, and De Raedt H (2002) New unconditionally stable algorithms to solve the time-dependent Maxwell equations. *Springer Verlag Lecture Notes in Computer Science (LNCS)* 2329, 803.

Kole JS, Figge MT, De Raedt H (2002) Higher-order unconditionally stable algorithms to solve the time-dependent Maxwell equations. *Phys Rev E Stat Nonlin Soft Matter Phys* 65(6 Pt 2), 066705.

Figge MT, Mostovoy M, Knoester J (2001) Peierls transition with acoustic phonons and solitons in carbon nanotubes. *Phys Rev Lett* 86(20), 4572-4575.

Kole JS, Figge MT, De Raedt H (2001) Unconditionally stable algorithms to solve the time-dependent Maxwell equations. *Phys Rev E Stat Nonlin Soft Matter Phys* 64(6 Pt 2), 066705.

Figge MT (2000) Disorder and interchain interactions in Peierls systems. In: PhD thesis, University of Groningen. ISBN: ISBN 90-367-127.

Figge MT, Mostovoy M, Knoester J (1999) Disorder-induced neutral solitons in degenerate ground state polymers. *Synthetic Metals* 101(1-3), 388-389.

Figge MT, Mostovoy M, Knoester J (1999) Magnetic susceptibility due to disorder-induced neutral solitons in interacting polymer chains. *Physical Review B* 59(21), 13882-13891.

Mostovoy M, Figge MT, Knoester J (1998) Density of neutral solitons in weakly disordered Peierls chains. *Physical Review B* 57(5), 2861-2871.

Mostovoy M, Figge MT, Knoester J (1998) Critical temperature and density of spin flips in the anisotropic random-field Ising model. *Physical Review B* 58(5), 2626-2634.

Mostovoy M, Figge MT, Knoester J (1997) Disorder-induced solitons in conjugated polymers. *Europhysics Letters* 38(9), 687-692.

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